

## CLINICAL GUIDELINES

# Universal precautions for the prevention of HIV and HBV infection in health care settings

Committee for Science and Education, Medical Association of South Africa

**Objective.** To outline the principles guiding the deliberate actions that should be taken in health care settings to prevent the spread of pathogens, especially HIV and hepatitis B virus (HBV), to patients and health care workers (HCWs).

**Outcomes.** Universal precautions should be implemented in all health care settings.

**Evidence.** Based on similar international recommendations.

**Values.** An adaptation of an existing guideline, it was sent to 87 organisations for comment. The comments received were included where possible in this guideline. It is the right of HCWs and patients to be protected from nosocomial HIV and HBV infection.

**Benefits, harms and costs.** The prevention of costly HIV and HBV infection by simple, rational precautions in the health care setting. The cost to the health care system has not been measured. The cost to individual patients or HCWs who acquire either infection is inestimable.

**Recommendations.** The guideline recommends that the four basic elements of universal precautions be implemented appropriately in all health care settings: (i) body fluids should be handled with the same precautions as blood; (ii) avoidance of sharps (sharp objects); (iii) avoidance of skin or mucous membrane contamination; (iv) cleaning/disinfecting/sterilising.

**Validation.** The draft guideline was subjected to extensive external review by specialist, generalist and health professional groups. These included HIV activist groups. There were no major disputes about the content. The most important amendment to the draft guideline is the inclusion of HBV and other related pathogens together with the HIV.

**Development and funding.** The Medical Association of South Africa Committee for Science and Education.

**Endorsements.** The MASA and twenty national health care organisations and three provincial health authorities (see list at end of document).

*S Afr Med J* 1995; 85: 381-383.

Committee members: E. M. Barker (Chairperson), B. M. de Bruijn, E. J. Immelman, D. G. C. Presbury, A. D. P. van den Berg, V. J. Pinkney-Atkinson

## Definition

Universal precautions are deliberate actions taken in health care settings to prevent the transmission of certain pathogens from patient to patient, from patient to health care worker (HCW), and from HCW to patient. In particular, universal precautions aim to prevent hepatitis B virus (HBV) and HIV from contaminating and penetrating the skin (particularly non-intact skin), mucous membranes and conjunctivae.

## Objective

To set guidelines for the implementation of universal precautions to prevent pathogens (especially HIV and HBV) from infecting HCWs and patients in health care settings.

## Rationale

Patients and HCWs are at increased risk of infection from HBV, HIV and other blood-borne pathogens during procedures and care. Although HCWs are at increased risk of HIV infection, this risk is relatively small. Every institution and practice providing health care (private and public) must have a clearly defined policy document stating the universal precautions for that setting. This document must be available and familiar to all employees. These institutions and practices must adopt procedures for: (i) the ongoing education of all HCWs (irrespective of level); and (ii) monitoring the effective implementation of universal precautions.

The most serious risk of infection is faced in emergency admitting rooms (casualty/trauma units). The pressure of work together with inadequate staffing, space, lighting and equipment make the application of universal precautions virtually impossible. The high prevalence of HIV seropositivity among patients attending these facilities further increases the risk of exposure.

The Medical Association of South Africa recommends that all HCWs be informed of their absolute right to the provision of all facilities and equipment necessary for the implementation of universal precautions as stated in this document. The MASA will intervene on behalf of doctors where adequate equipment and supplies are not provided by the employing authority.

The following simple and logical measures are cost- and time-efficient. Routine implementation of universal precautions by all HCWs will greatly reduce the risk of patient and HCW infection. The disciplined implementation of universal precautions should make the pretreatment determination of a patient's HIV status irrelevant in terms of HCW safety.

## Methods

This guideline is an adapted and expanded version of a section contained in the original MASA AIDS ethical guideline.<sup>1</sup> The universal precautions guideline is similar to existing international recommendations.<sup>2-4</sup> A draft document

was circulated to 87 national health care organisations (including professional associations and trade unions) and to provincial health authorities for comment and endorsement; a Delphi-type methodology was used. The draft guideline was subjected to extensive external review by specialist, generalist and health professional groups. These included HIV activist groups and trade unions.

Thirty-three responses were returned and the comments were accommodated where possible in the final guideline. Only national organisations and regional health authorities are listed as endorsing the guideline. There were 20 such national groupings. Consensus-seeking commenced in February and continued until November 1994. The MASA funded the universal precautions guideline project. There were no major disputes about the content. The most important amendment to the draft guideline is the inclusion of HBV and other blood-borne pathogens.

## Basic elements of universal precautions

### 1. Body fluids should be handled with the same precautions as blood

Cerebrospinal fluid, peritoneal fluid, pleural fluid, pericardial fluid, synovial fluid, amniotic fluid, semen, vaginal secretions, breast-milk, unfixed tissues and organs (including the placenta), any blood-stained body fluid, and saliva associated with dentistry should all be handled with the same precautions as blood.

Body fluids such as urine, sweat and saliva (except in the context of dentistry) do not pose any known risk.

### 2. Avoidance of sharps (sharp objects)

- Recognise and avoid all potentially risky objects, not only needles and knives. Examples include towel clips, suction drain introducers and bone spicules.
- Hollow needle-stick injuries account for almost all nosocomial infections recorded.
- Never allow a sharp, especially a contaminated one, near fingers. For example, do not re-sheath used needles, use instruments to load and unload scalpel blades.
- Take personal responsibility for the immediate safe disposal of all sharps used. The safe disposal of sharps requires further specialised precautions.
- Never hand a sharp to another person. Use an agreed neutral area where the sharp is placed and then picked up. The use of magnetic pads assists with this in the operating room.
- Never pick up a sharp without looking at it.
- Never put a sharp down except in an agreed neutral area.

Table 1. Summary of the basic elements of universal precautions

Body fluids should be handled with the same precautions as blood.

Avoidance of sharps (sharp objects).

Avoidance of skin or mucous membrane contamination.

Cleaning/disinfecting/sterilising.

- Use the safest sharp that will do the job. For example, knives and needles for skin only, scissors and round-nosed needles for tissues.
- Never feel for a needle point (or other sharp object) with the fingers.
- Never put fingers in areas or wounds where a sharp is being used.
- Do not shave patients pre-operatively or pre-delivery unless it is essential for the procedure.
- Avoid the use of wire sutures if possible.
- Use heavy-duty gloves (ring link or similar) in hazardous situations (broken bones, sharp foreign bodies).

## 3. Avoidance of skin or mucous membrane contamination

The following three risks are identified: (i) contamination of hands with body fluids; (ii) spillage on the HCW's body; and (iii) spray/aerosol to eyes and face.

### 3.1. Hand protection

- Only have direct contact with a patient and potential fomites (e.g. soiled linen) if non-intact skin on the hands (e.g. cuts, eczema) can be completely isolated by impermeable adhesive tape.
- Wear appropriate quality gloves: (i) every HCW handling blood/body fluid must use latex gloves; (ii) remove torn gloves immediately and wash away contamination; and (iii) double-gloving reduces skin contamination during operations by 80% and may reduce the risk associated with sharps injury.

### 3.2. Blood/body fluid spillage

- Use plastic aprons and impermeable boots where risk of spillage exists.
- Ensure that spillage is immediately cleaned according to the guidelines in 4.5.
- All blood and other specimens must be in containers with non-leaking stoppers or lids, and be placed in sealed plastic bags.
- All unfixed tissues and organs (including placentas) must be placed in sealed plastic bags prior to incineration.

### 3.3. Spray/aerosol precautions

- Use face/eye protection (face-shields, eye-goggles) where risk exists.
- Continuously aspirate laser and fulguration smoke by suction.

### 3.4. Decontamination from blood and other body fluids

- Skin — wash with soap and water at once.
- Mouth and eyes — wash copiously with water.
- Skin puncture — allow to bleed.

## 4. Cleaning/disinfecting/sterilising

### 4.1. Disinfecting/sterilising

Moist heat (autoclaving) and dry heat (160°C for 1 hour) readily destroy HIV. HIV is very sensitive and is destroyed by boiling for 5 minutes. A wide range of disinfectants may be

used (see below). Thorough washing before disinfection or sterilisation is essential for all equipment. Gloves and plastic aprons should be worn for this procedure.

#### 4.2. Suitable disinfectants

- Glutaraldehyde — 2% x 1 hour.
- Hypochlorite solutions — 2 000 parts per million (ppm) for general cleaning, 10 000 ppm x 30 minutes for soaking blood-contaminated material.
- Ethyl alcohol — 70% V/V x 1 hour.
- Isopropanol — 70% V/V x 1 hour.
- Iodine — 1% x 30 minutes.

Inactivation of HIV occurs after 5 minutes' exposure to most of these agents. The longer exposure time given here accommodates the possible presence of other pathogens and the time required to destroy these pathogens, e.g. HBV.

#### 4.3. Equipment

Wear gloves when handling equipment contaminated by blood or body fluids. Blood-stained equipment must be wiped as clean as possible with paper towels, which must be discarded after use. Wipe the item with a hypochlorite solution (if suitable) and send it for the usual sterilisation. If such cleaning is not possible, place the item in a sealed and labelled clear plastic bag. Protect sharp instruments adequately.

#### 4.4. Linen

Only handle blood-stained linen with gloved hands. If at all possible, contaminated linen should be placed directly in an appropriately sealed and labelled plastic bag from whence it should be tipped directly into a cold water sluice or washing machine. If this is not possible the following steps should be taken:

- Wipe off as much blood as possible.
- Soak the blood-stained area in a bucket containing 10 000 ppm available chlorite for at least 30 minutes.
- Send the linen for the usual laundering (hot wash 65 - 70°C for 5 minutes).

#### 4.5. Body fluid spillage

Wear gloves and remove the spillage with paper towels. Immediately discard the soiled paper towels into an appropriate bag for incineration. Once the area is largely free of organic material from the spillage, pour a disinfectant containing 2 000 ppm available chlorite over the area and allow it to stand for at least 15 minutes. Use paper towels to wipe the area clean and dry.

**Developed and funded by:** MASA Committee for Science and Education.

**National Groups endorsing the guideline:** AIDS Consortium, Association of Physicians of South Africa, Association of Nuclear Physicians, College of Medicine of South Africa, Community Health Association of South Africa, Community Health Group, Federation of South African Societies of Pathology, Junior Doctors Association of South Africa, Medical Association of South Africa, National Council Against Smoking, National Pathology Group, Ophthalmological Society of South Africa, Paediatric Association of South Africa, Provincial Deputy Director Generals Hospital and Health Services: Cape, Natal, OFS, South African Academy of Family Practice, South African Association of Medical Scientists, South African National

Consumer Union, South African Paediatric Orthopaedic Society, South African Society of Anaesthetists, South African Society of Obstetricians and Gynaecologists, South African Society of Radiotherapists and South African Society of Specialists in Physical Medicine.

#### REFERENCES

1. MASA Science and Education Committee Guidelines for the Management of HIV/AIDS. *S Afr Med J* 1992; **82**: suppl, Dec.
2. Centers for Disease Control. Recommendations for the prevention of HIV transmission in health-care settings. *MMWR* 1987; **36**: suppl 2S, 21 Aug.
3. Hu DJ, Kane MA, Heymann DL. Transmission of HIV, hepatitis B virus, and other bloodborne pathogens in health care settings: a review of the risk factors and guidelines for prevention. *Bull World Health Organ* 1991; **69** (5): 623-630.
4. Sattar SA, Springthorpe VS. Survival and disinfectant inactivation of the human immunodeficiency virus: a critical review. *Rev Infect Dis* 1990; **13**: 430-437.

Accepted 30 Jan 1995.

## Dokter en digter

### Blanke-vers

woorde  
ongerymd  
rym lankal nie meer in sinne nie  
woorde maak lankal nie meer sin nie  
want sinne verdof  
tot blanke vers

Op die marmertafel  
klinies ontbloom  
die waarheid half-half  
alikeukel-ooop

'n kamma-sad grimas  
huigel pluiswol  
aan haak-en-steek-gesigte vas

dié land haal bosswaar asem  
aan wurgslym en partikels roet

en grammig braak die dooiekuns  
aan witborskraai en bloed

### L. Saueremann